

Mass Spectra and Primary Processes in the
Radiochemistry of Paraffins

S/020/61/136/004/019/026
B028/B060

impact. As is shown, the calculation of the mass spectra of n-paraffins is quantitative with no arbitrary quantity being used. Only the distribution function of the excitation energy was chosen for each substance in agreement between experiment and calculated mass spectrum. Results of the "local" theory showed that dissociation took place by electron impact in the region of collision, without any appreciable new distribution of energy over all molecules. In group mass spectra the probability of the formation of all ions with a given number of C atoms is independent of the number of hydrogen atoms. The following assumptions were made in the calculation: split ions are formed on the collision of the molecule with electrons. C-C bonds are split at equal distances from the point of collision. The probability of the formation of "fragments" depends upon their size, i.e., on the number of C atoms. If the number of C atoms n is supposed to be large enough, the molecule may be regarded as being continuous. The probability $\varphi_n(x)$ for the formation of fragments for a finite molecule and for an infinitely large molecule, $f(x)$, is assumed to be a steady function of the fragment size x . In the calculation, the collisions of electrons with any points of the molecules were regarded

Card 2/5

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Radiochemistry of Paraffins

S/020/61/136/004/019/026
B028/B060

as being equally probable. The probability $\varphi(x, l)$ of the formation of fragments in one collision is a linear function of the fragment size x , and the distance, l , from the point of collision to the end of the molecule. One half of a molecule is considered: $0 \leq l \leq n/2$. It follows that $\varphi(x, l) = f(x)$ for $x \leq 2l$, or $l > x/2$. If, however, $l < x/2$, only one bond at the end of the molecule is split and a fragment of the size $x = l + y/2$ with the probability $f(y)$ for $y = 2x - 2l$, is formed. It follows (1) $\varphi(x, l) = f(x)$ for $l > x/2$ and $\varphi(x, l) = f(2x - 2l)$ for $l < x/2$. As the mean probability there follows

$$\varphi_n(x) = (2/n) \int_0^{n/2} \varphi(x, l) dl. \text{ The substitution of } \varphi(x, l) \text{ from (1) gives (2)}$$

$$\varphi_n(x) = (1-x/n)f(x) + (1/n) \int_x^{2x} f(t) dt. \quad \varphi_n(n) = 1/2n \int_n^{2n} \int_t^\infty f(z) dz dt \quad (3) \text{ follows}$$

for molecular ions. The distribution of neutral fragments $r(x)$ is given by

$$r(x) = (1/n) \int_0^{2n-2x} f(t) dt \quad (4). \text{ From (2) and (4) one may calculate the}$$

Card 3/5

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S/020/61/136/004/019/026
B028/B060

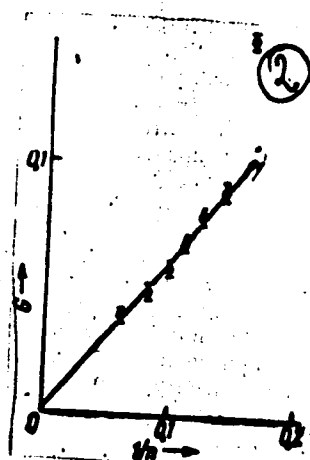
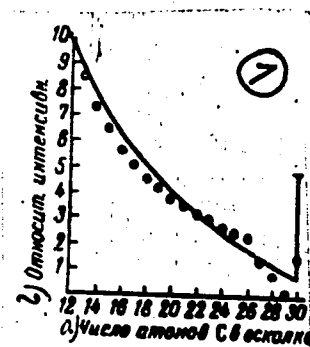
distribution of the primary dissociation products resulting from radiolysis in the gaseous phase. For the methane yield in the radiolysis of various sufficiently heavy n-paraffins, ($x=1, n>5$), one obtains from equations (2) and (4): $G=a/n+b$. G = yield (molecules/100 ev), a and b being constants. ($b \ll a$). Fig. 2 shows that the experimental data form a hyperbola. From the theory one may also estimate the relative yield of olefins in radiolysis. Dissociation takes place in 10^{-13} sec. The author thanks Professor N. N. Tunitskiy for aid and discussion. There are 2 figures, 2 tables, and 9 references: 3 Soviet and 6 US.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

PRESENTED: August 23, 1960, by S. S. Medvedev, Academician

SUBMITTED: August 22, 1960

Card 4/5



S/020/61/136/004/019/026
B028/B060

Legend to Fig. 1: a) number of C atoms per fragment, b) relative intensity.

Card 5/5

GUR'YEV, M.V.

[Dissociation of large molecules under electronic impact;
author's resume of a dissertation for the degree of Candidate of
Chemical Sciences] Dossotsiatsiia krupnykh molekul pri elektron-
nom udare; avtoreferat dissertatsii predstavlennoi na soiskanie
uchenoi stepeni kandidata khimicheskikh nauk. Moskva, Gos. komi-
tet Soveta Ministrov SSSR po khimii, 1959. 9 p. (MIRA 15:1)
(Molecules) (Electrons)

54600

32321

S/081/61/000/024/002/086

E138/B102

AUTHORS: Gur'yev, M. V., Tikhomirov, M. V., Tunitskiy, N. N.

TITLE: Dissociation of large molecules under electron impact

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 24, 1961, 14, abstract 24B79 (Tr. Tashkentsk. konferentsii po mirn. ispol'zovaniyu atomn. energii, v. 1, 1959. Tashkent, AN UzSSR, 1961. 378 - 382)

TEXT: Comparison has been made the mass spectra of synthesized n-octane and n-octane-2d₁, n-nonane and n-nonane-5C¹³ from normal and labeled molecules. The probability of the formation of "leading" fragment ions of the C_nH_{2n+1} type was found to be roughly the same for any part of a molecule, i. e. by breaking two C - C bonds. The intensities of the remaining ions were calculated on the assumption that they are formed from parts of the molecules whose compositions correspond to the leading ions. The results of the calculation are in very good agreement with experimental data. In Card 1/2

Dissociation of large molecules ...

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B138/B102

all probability type C_n^+ and C_nH^+ ions are formed from the end groups of a molecule. Thus, dissociation processes, which require very considerable excitation energy, are most likely to take place on the end groups of a molecule. [Abstracter's note: Complete translation.]

X

Card 2/2

GUR'YEV, M.V.

Molecular ions of n-paraffins. Zhur. fiz. khim. 34 no.2:475
F '60. (MIRA 14:7)
(Paraffins) (Ions)

33123

S/638/61/001/000/054/056

B125/B104

11.9100

AUTHORS:

Gur'yev, M. V., Tikhomirov, M. V., Tunitskiy, N. N.

TITLE:

Dissociation of big molecules on electron impact

SOURCE:

Tashkentskaya konferentsiya po mirnomy ispol'zovaniyu
atomnoy energii. Tashkent, 1959. Trudy. v. 1. Tashkent,
1961, 378-382

TEXT: The mass spectra of the ramified hydrocarbons cannot be explained even qualitatively by the hypothesis of simple rupture. Ion fragments of the type $C_nH_{2n+1}^+$ are formed from all parts of the molecule with approximately equal probability. From the central parts of the paraffin molecule they are formed by the capture of a hydrogen atom. The mass spectra of n-octane-2d₁, n-octane, n-nonane-5C¹³, and n-nonane were examined under the usual conditions by Soviet mass spectrometers. Since 46% of the resulting ion fragments $C_3H_7^+$ (generally $C_nH_{2n+1}^+$) contains C¹³ in the dissociation of n-nonane-3C¹³, the ion fragments are bound to form with about equal probability from all parts, also from the central

Card 1/3

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33123
S/638/61/001/000/054/056
B125/B104

Dissociation of big molecules ...

parts of the molecule. The percentages, found experimentally of the marked ions of the type CH_3^+ , C_2H_5^+ , C_3H_7^+ , and C_4H_9^+ , found in the dissociation of n-nonane 5C^{13} and n-octane-2d₁, (as percentage of the total number of ions) differ from the percentages calculated theoretically due to the different probabilities of ions rupture from different parts of the molecule. According to Yu. M. Miller, the dissociation mechanism does not change significantly even at electron energies of ~ 400 eV. On electron impact, big molecules are probably dissociated as follows: When a hydrogen atom is captured, ion fragments $\text{C}_n\text{H}^{2n+1}$ with even number of electrons are

formed from all parts of the molecule with approximately the same probability. The residual ions arise from the molecular parts with composition similar to the ion fragments. The contribution of molecular ions to the mass spectrum is the smaller, the bigger the molecule (at otherwise equal structure). According to the authors' measurements and contrary to the statistical theory, the initial sections of the ionization curves of the C_3H_7^+ ion (from $\text{H}=\text{C}_8\text{H}_{18}$ and $\text{H}=\text{C}_{19}\text{H}_{40}$) coincide. However, all contradictions dissolve if it is assumed that the energy transferred from the electron does not propagate over the whole molecule prior to dissociation. X

Card 2/3

33123

S/638/61/001/000/054/056

B125/B104

Dissociation of big molecules ...

tion. The excitation energy required for the rupture of the second C-C bond is widely compensated by the transition of a hydrogen atom. The excitation energy is easily transferred over a system of conjugate bonds if double bonds or any other bond conjugations exist. Benzene, other aromatic compounds, and also olefins dissociate statistically after the excitation energy has transferred over the whole molecule. The hypothesis suggested here, however, is valid for sufficiently big molecules only. The excitation energy transferred from the electron to the molecule is probably distributed over three to four oxygen molecules. There are 1 table and 11 references: 3 Soviet and 8 non-Soviet. The four most recent references to English-language publications read as follows: Field F. H., Franklin I. L. Electron impact phenomena, New York, 1957; Mc Lafferty F. W. Anal. Chem., 28, 306, 1956; Catalog of Mass-spectral Data, American Petroleum Institute, Research Project, 44, 1955; Friedman L., Long F. A., Wolfsberg M. J. Chem. Phys., 26, 714, 1957.

ASSOCIATION: N.-i. fiziko-khimicheskiy institut im. L. Ya. Karpova
(Scientific Physicochemical Research Institute imeni L. Ya. Karpov)

Card 3/3

S/844/62/000/000/004/129
D290/D307

AUTHOR: Gar'yev, H. V.

TITLE: Mass spectra and the primary processes in the radiation chemistry of paraffins

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 38-41

TEXT: The mass spectra of the fragments, produced by electron collisions in all normal paraffins are calculated, using the local theory which assumes that dissociation takes place almost immediately after the collision (within about 10^{-13} sec) and that negligible redistribution of energy occurs before dissociation. The basic calculations assume that the paraffin molecules are infinite and can be broken at any point; further assumptions are introduced to allow for finite molecules. The predicted mass spectra agree well with published results for the radiolysis of nonane, hexane, and $C_{30}H_{62}$, except for the cases of the molecular ions. The theory
Card 1/2

Mass spectra and ...

S/844/62/000/000/004/129
D290/D507

also explains the absence of any protective effect for normal paraffins. The assistance of Professor N. N. Tunitskiy is acknowledged. There are 2 figures and 2 tables.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-Chemical Institute im. L. Ya. Karpov)

Card 2/2

ACCESSION NR: AT3012830

S/2965/63/000/003/0086/0093

AUTHORS: Gur'yev, M. V.; Tikhomirov, M. V.

TITLE: Some technical questions concerning mass-spectrometer investigation of large molecules

SOURCE: Moscow. Fiziko-khimicheskiy institut. Problemy* fizicheskoy khimii, No. 3, 1963, 86-93

TOPIC TAGS: mass-spectrometry, large molecule, mass-spectrum, n-C sub32 Hsub66, n-Csub9Hsub20, ionization curves, n-Csub8Hsub18, n-Csub19Hsub40, n-Csub32Hsub66, Csub2Hsub5, Csub3Hsub7, Csub6Hsub13, Xe

ABSTRACT: Ionization curves of the ion $C_3H_7^+$ from n-octane and n-nonadecane are shown to be comparatively close down to the potential of origin, while the ionization curve for $C_3H_7^+$ from n-dotriacontane went significantly lower. The deviation of $C_3H_7^+$ from n-dotriacontane starts at 60 ev and becomes very abrupt at 20-30 ev. According to startistical theory, the probability of dissociation is determined by the relationship of the activation energy to the amount of molecular freedom. Therefore, it must be approximately proportional

Card 1/3

ACCESSION NR: AT3012830

to the size of the molecules. Mass-spectra are presented for n-nonane with m/e values covering a range of 26-128. Results are compared with those obtained in the United States as listed in the Catalog of Mass-Spectral Data, No. 132. Mass-spectra are also presented for n-dotriacontane covering the range of m/e values 13-267. Ionization curves of $C_nH_{2n+1}^+$ ions from n-octane for $C_2H_5^+$, $C_3H_7^+$ and $C_6H_{13}^+$ are compared. In addition, there are ionization curves for Xe without organic substances, with n-dotriacontane, up to the time of admission of n-dotriacontane and after admission; ionization curves of $C_3H_7^+$ from n-dotriacontane at 200 and 375°C and from n-octane; ionization curves of Xe, plotted in experiments with the ionization box, which was made from stainless steel, at various voltage draws (i.e., 130V. and 90V.); and ionization curves of $C_3H_7^+$ from n-dotriacontane without and with magnetic source. The mass spectra were obtained by means of a modified MI-1303 Mass Spectrometer and the apparatus and method of investigation are discussed. Orig. art. has: 8 figures and 2 tables.

ASSOCIATION: Fiziko-khimicheskiy institut, Moscow, (Physicochemical Institute)

Card 2/3

ACCESSION NR: AP4020332

S/0089/64/016/003/0245/0249

AUTHOR: Kalinina, M. D.; Nikolayev, N. I.; Gur'yev, M. V.; Tunitskiy, N. N.

TITLE: Investigating the effect of Co^{60} gamma-radiation on strong-base anionites AB-17 and AM.

SOURCE: Atomnaya energiya, v. 16, no. 3, 1964, 245-249

TOPIC TAGS: anionite, gamma radiation, Co^{60} radiation, radioactive isotope, radiolysis, vacuum exsiccator, magnesium, trimethyl amine, gaseous product, exchange group, inert state, calcium chloride, nitric acid, carbonate ion

ABSTRACT: Experiments have been made on the radiation stability of the polymerization type anionites AB-17, containing 6 and 16% divinyl benzene (also referred to as AB-17X6 and AB-17X16), and AM by irradiating them in water with Co^{60} . The maximum total irradiation dose amounted to 4.7×10^8 roentgens. Before irradiation the anionite samples were changed into a hydroxyl form by a caustic soda solution and then carefully washed with water. After irradiation

1/2
Card

ACCESSION NR: AP4020332

tion, the anionites grew dark and their weight and volume became smaller. The resulting solution containing the radiolytic decomposition products of the anionites is foamy, acquires a yellow tinge, and becomes turbid because of the presence of a fine anionite fraction in it. Synthetic ionites are organic polymeric substances and are therefore affected by irradiation in the same way as are polymers. It should be borne in mind that the chemical action of the radiation may largely depend on the nature of the substance, that is, on the newly formed radicals and the probability of their interaction with the new compounds. Generally, however, the radiation stability of organic compounds, including ionites, is limited to a dose of the order of 10^9 roentgens. When irradiated with a dose of 4.7×10^8 roentgens, the relative volume of the AB-17X16, AB-17X6, and AM anionites is reduced by 35, 45, and 43% respectively. Orig. art. has: 1 formula and 5 tables.

ASSOCIATION: one
SUBMITTED: 24Apr63

DATE ACQ: 31Mar64

ENCL: 00

SUB CODE: NS, CH

NR REF SOV: 015

OTHER: 012

Card

ACCESSION NR: AP4020586

S/0057/64/034/003/0536/0545

AUTHOR: Gur'yev, M.V.; Sumin, L.V.; Tunitskiy, N.N.

TITLE: On the measurement of the kinetic energy of fragmented ions by means of a mass spectrometer. 1. Analysis of the line shape

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.3, 1964, 536-545

TOPIC TAGS: mass spectrometry, ion energy distribution, molecular ion dissociation, mass spectrometer line shape, faltung equation, nitrogen ion, nitrogen molecule ion

ABSTRACT: This paper is concerned with the measurement by means of a mass spectrometer of the energy distribution of atomic ions formed by the dissociation of excited molecular ions. To accomplish such a measurement it is necessary numerically to solve the faltung equation relating the observed line shape, the true line shape and the instrumental broadening, and then to solve a second integral equation relating the true line shape to the energy distribution in the center of mass system of the dissociating ion. These two mathematical processes are discussed in some detail. Concerning the solution of the faltung equation, the following two possibly useful suggestions are made: 1) It frequently occurs that the significant difference be-

Card^{1/3}

ACCESSION NR: AP4020586

tween the observed and the instrumental line shapes consists of relatively small deviations in one wing, the effect of which may be masked in the numerical work by random errors from the more intense central portion of the line. It is suggested that in such a case the three functions involved be replaced by their products with an appropriately chosen exponential function. The relation between the functions remains that of faltung, and the effect of the wing shape in the numerical procedure can be enhanced by properly choosing the exponential. 2) It is suggested that the sharp central peak in the true line shape (when there is such) be represented by a delta function. Means for determining the coefficient of the delta function are discussed. The integral equation relating the true line shape to the ion energy distribution is derived on the assumption that the energy distribution is isotropic, and approximate methods for solving it are discussed. The fraction of the total number of ions formed that enter the spectrometer (required for cross section measurements), and the average energy, can be obtained from the first two moments of the observed and the instrumental line shapes, without solving the faltung equation. The cross sections for production of N^+ and N_2^+ by 140 eV electron impact, and the energy distribution of the N^+ ions so produced, were determined by the methods discussed. A type MV-2302 mass spectrometer was employed, with a secondary emission

2/3

Card

ACCESSION NR: AP4020586

multiplier to record the ion current. The mean energy of the N^+ ions was about 3.3 eV, varying somewhat with the strength of the extracting field. The cross sections for producing N^+ and N_2^+ were equal within the 20% experimental error. This last result is not in agreement with the findings of other workers; the yield of N^+ has usually been found to be an order of magnitude less than that of N_2^+ . Orig.art. has: 22 formulas, 2 figures and 1 table.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L.Ya.Karpova, Moscow (Physical-Chemical Scientific Research Institute)

SUBMITTED: 18Feb63

DATE ACQ: 31Mar64

ENCL: 00

SUB CODE: PH

NR REF SOV: 005

OTHER: 007

3/3

Card

ACCESSION NR: AP4043615

S/0056/64/047/002/0452/0454

AUTHORS: Sumin, L. V.; Gur'yev, M. V.; Tunitskiy, N. N.

TITLE: Average momentum and energy of excitation of argon ions

SOURCE: Zh. eksper. i teor. fiz., v. 47, no. 2, 1964, 452-454

TOPIC TAGS: excitation, molecular physics, momentum transfer, ionization, mass spectrometry, argon

ABSTRACT: A method is described for determining the excitation energy of molecular ions, based on the measurement of the momentum transferred by the electron to the atom or to the molecule. This energy is in turn determined from the measured velocity acquired by the atomic or molecular ion. The positive ion velocity was measured with a mass spectrometer using the deflection method described by C. Berry (Phys. Rev. v. 78, 597, 1950). The experimental values of the momenta of several ions are presented, together with the cor-

Card 1/3

ACCESSION NR: AP4043615

responding excitation energies. For Ar^+ ions, the average energy transferred to the momentum by the ionizing electron turn out to be unexpectedly large, close to 50 eV. "The authors thank L. A. Vaynshteyn and I. I. Sobel'man for a detailed discussion of the results, and also V. G. Vasil'yev and S. Ye. Kupriyanov for many useful remarks." Orig. art. has: 2 formulas and 1 table.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova
(Physicochemical Institute)

SUBMITTED: 09Mar64

ENCL: 01

SUB CODE: NP

NR REF SOV: 002

OTHER: 006

Card 2/3

ACCESSION NR: AP4043615

ENCLOSURE: 01

Average momentum and excitation energy of several ions

1 Ион	Энергия ионизации 2 E_0 , eV	$\bar{p}_x \cdot 10^4$, eV $^{1/2}$	J, eV
Ar ⁺	180	9.5 \pm 1	56 \pm 6
Ne ⁺	30	52 \pm 6	—
He ⁺	140	20 \pm 3	33 \pm 5
H ₂ ⁺	180	13 \pm 2	17.4 \pm 3
CH ₄ ⁺	90	4 \pm 2	10 \pm 5
C ₂ H ₂ ⁺	140	2 \pm 2	11 \pm 11

1 - Ion, 2 - Electron energy E_0 , eV

Card 3/3

L 25244-65 EWT(1)/T IJP(c)

ACCESSION NR: AP5001521

S/0020/64/159/006/1134/1136

AUTHOR: Sumin, L. V.; Gur'yev, M. V.

TITLE: The dissociation of molecular ions

SOURCE: AN SSSR. Doklady, v. 159, no. 5, 1964, 1134-1136

TOPIC TAGS: molecular ion dissociation, local ion dissociation mechanism, migrating ion excitation, angular ion distribution, anisotropy, $C_4H_9^+$ ion, low energy electron migration

ABSTRACT: The dissociation of large (tens of atoms), excited molecular ions has been the object of two mutually exclusive assumptions: that of migration of the excitation over the molecular ion up to its dissociation requiring a time equal to the vibrational period of the atoms (10^{-6} sec.), and the local mechanism of dissociation occurring mainly in the region of collision of the electron with the molecule, equal to a time of a period of one vibration (10^{-13} sec.). This work attempted to determine dissociation within time limits of the order of less than

Card 1/3

L 25244-65

ACCESSION NR: AP5001521

10⁻¹³ seconds, and estimate the probability of charge migration through the molecular ion up to its dissociation. A special method was developed based on the angular distribution of the fission ions which is isotropic, thus related to rapid dissociation only. The probability estimate was then derived from the anisotropy observed. The observations were conducted with a mass spectrophotometer, provided with a special ion source, on the C₄H₉⁺ ion from 2, 2, 4-trimethylpentane, n-octane and n-hexane. Relative measurements were also conducted for molecular and fission ions and for 2 directions of the electron beam. The excitation energy was assumed at 13 electron volt (ev) for both the fission and the molecular ion. This value amounted to about 15% of the observed anisotropy value. A table reports values for the mean rates for ions from the various molecules and those for anisotropy. The share of the rapid processes among processes of ion formation was determined by combining experimental and theoretical values. A value of 0.01 ev^{1/2} was found for the anisotropy. Thus the basic mass of the C₄H₉⁺ ions is formed by the local mechanism. The reason for the variation of anisotropy for the various compounds is discussed. Highly energized electrons should migrate through the whole molecule without significant screening effect; then no anisotropy would be observed (electron energy 1000 ev). Results obtained

Card 2/3

L 25244-65

ACCESSION NR: AP5001521

can only be explained by assuming the local mechanism. "The authors wish to
thank N. N. Tunitskiy for his continuous interest and help in this work and
V. L. Tal'rose for its thorough consideration." Orig. art. has: 1 table

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physical-
Chemical Institute)

SUBMITTED: 18Jun64

ENCL: 00

SUB CODE: GP

NR REF SOV: 003

OTHER: 005

Card3/3

SUMIN, L.V.; GUR'YEV, M.V.

Method of determining the excitation energy of molecular ions.
Kin. i kat. 6 no.1:31-36 Ja-F '65. (MIRA 18:6)

1. Fiziko-khimicheskiy institut imeni Karpova, Moskva.

L 11039-66 EWT(1)/EWT(m)/EWP(j)/EWA(m)-2/EWA(h) IJP(c) AT/CS/RM

ACC NR: AT5023426

SOURCE CODE: UR/0000/65/000/000/0009/0011

AUTHOR: Gur'yev, H. V.; Sumin, L. V.

ORG: none

TITLE: Elemental processes involving electrons and ions. Dissociation of molecules due to electron impact and radiation chemistry

SOURCE: Simpozium po elementarnym protsessam khimii vysokikh energiy. Moscow, 1965. Elementarnyye protsessy khimii vysokikh energiy (Elementary processes of the chemistry of high energies); trudy simpoziuma. Moscow, 1965, 9-11

TOPIC TAGS: ion energy, ion, mass spectrum, particle collision, electron energy, excited state, mass spectrometry

ABSTRACT: Primary products of dissociation of molecules, excited by electron impact, were investigated by the mass spectrometry method. In the case of n-hexane the mass spectra of ion fragments containing two or three carbon atoms were taken using a MV23-02 instrument with a resolution (based on line half-height) of about 9000. Most of the ions of a general formula $C_n H_m^+$ ($m < 2n + 1$) are formed during 10^{-7} - 10^{-8} sec and for a given "n" the smaller the "m" the greater is the lifetime of these ions. A similar reaction also applies to the ion fragment kinetic energy indicating that the ions are formed during secondary disintegrations. The CH_2^+ ion is formed from

Card 1/2

L 11089-66

ACC NR: AT5023426

CH₄⁺ within $5 \cdot 10^{-8}$ sec. The C₃H₇⁺ and C₂H₅⁺ ions are formed in less than $5 \cdot 10^{-8}$ sec. Statistical energy distribution occurred in ion fragments. Molecule excitation energies were determined using electrons with an energy 3-4 times greater than the ionization energy. In collision with such energetic electrons, molecules assume a kinetic energy of the order of 10^{-5} ev. The accuracy determination excitation energies for H₂⁺ and He⁺ using this method was as high as 30%. In the case of slow disintegration processes, the method can be applied successfully to all secondary ions. Orig. art. has: 1 formula.

SUB CODE: 20/01

SUBM DATE: 23Feb65/

ORIG REF: 000/

OTH REF: 000

Card ^m 2/2

L 15194-66 EWT(1)/EWA(h)/EWA(1) AT/GS/PM

ACC NR: AT5023428

SOURCE CODE: UR/0000/65/000/000/0015/0018 ⁵⁸

AUTHOR: Sumin, L. V.; Gur'yev, M. V.; Tunitskiy, N. N.

ORG: none

TITLE: True mass spectra and kinetic energy of ions

SOURCE: Simposium po elementarnym protsessam khimii vysokikh energiy. Moscow, 1963.
Elementarnyye protsessy khimii vysokikh energiy (Elementary processes of the chem-
istry of high energies); trudy simpoziuma. Moscow, 1965, 15-18

TOPIC TAGS: mass spectrum, ion, kinetic energy, ion energy, electron energy

ABSTRACT: The problem of deviation of the actual ^{21,44155} mass spectra of ions from the corresponding true mass spectra is discussed. The larger the initial kinetic energy of an ion the greater its discrimination in the mass spectrometer. The relation between the ion energy distribution, determined from analysis of the line structure $\psi(E)$ and the initial ion energy distribution $\phi(E)$ is

$$\psi(E) = \frac{\text{const}}{V_1 V_2} E \varphi(E),$$

Card 1/3

L 15194-66

ACC NR: AT5023428

where V_1 and V_2 are the two dimensions characterizing the orifice of the mass spectrometer. The collection coefficient P is equal to

$$P = \text{const} \frac{f_0 k_0}{f_0 k_1 - f_1 k_0},$$

where f_0 and k_0 are experimentally determined peak areas for ion and molecule, respectively and f_1 and k_1 are initial points of the respective mass peaks. It was found that there is a significant discrepancy between the literature data on mass spectra of ions of organic compounds (e. g. *n*-hexane) ionized with 70 ev electrons and their true values. A partial mass spectrum of *n*-hexane considering the initial energy of ions is shown in fig. 1. Orig. art. has: 1 figure, 2 formulas.

Card 2/3

L 15194-66

ACC NR: AT5023428

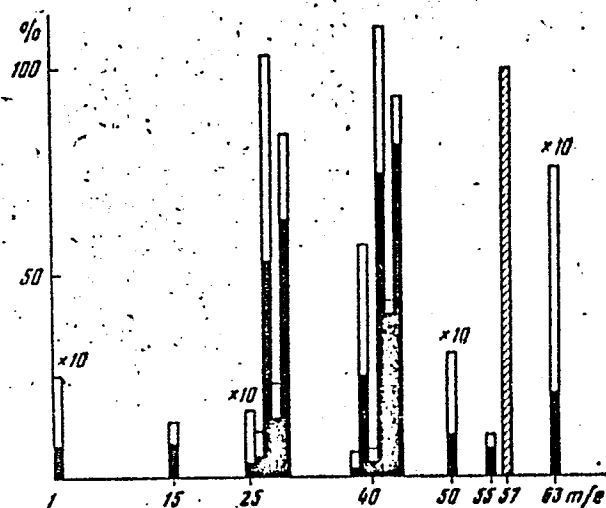


Fig. 1. ■ - mass spectra according to handbook

▨ - intensity of $m/e = 57$ line, assuming units of 100

□ - peak differential due to discrimination.

SUB CODE: 07 / SUBM DATE: 23Feb65/
Card 3/3

GUR'YEV, M.Ye., assistant

Problems of the wetting of wooden built-up roofs and loft roofs
of livestock buildings. Trudy Khar.inzh.estroi.inst. no.14:33-36
'60. (MIRA 15:7)

(Roofs) (Barns)

S/264/62,000/004/002/005
1006/1206

AUTHOR: Gur'yev, N.

TITLE: On the calculation of thin wall constructions by the methods of discrete unknowns

PERIODICAL: Referativnyy zhurnal, vozdushnyy transport. Svodnyy tom, no 4, 1962, 8-9, abstract 4 A44, (Tr. Kharkovsk. aviats. in-ta), no. 18, 1961, 117-126

TEXT: Thin-walled reinforced constructions are considered, with working skin and absolutely rigid frame. The stressed state is considered in the form of the sum of the statistically determined (basic) and statically undetermined (additional) stressed states. Due to linearity of the problem considered, determination of basic and additional (selfbalancing) stresses is independent, and the complete stresses can therefore be obtained by summation of basic and additional stresses. The investigation of the additional stressed state is conducted as a variational problem. ✓

[Abstracter's note: Complete translation.]

Card 1/1

2/14/99/000/04/030/020
E031/EN13

AUTHOR: Zolotukhin, V.K.

TITLE: The Scientific-Technical Conference at Khar'kov
Aviation Institute

PERIODICAL: Investiya vyzhikh uchebnykh zavedeniy, Aviatstionnaya
tehnika, 1959, Nr 8, pp 161-165 (USSR)

ABSTRACT: In May 1959, the 16th Conference of Professorial and
Teaching Staff took place.

Strength of Aircraft Section.

On the Theory of Bending of Thin-Walled Columns" by
Docent, Candidate of Technical Sciences L.P. Vinogradov;

"The Simulation of Static Experiments on Thin-Walled

Structures" by Candidate of Technical Sciences

L.A. Kolesnikov and Senior Instructor V.K. Zolotukhin;

"The Bending of Beams Framing an Opening" by

Candidate of Technical Sciences L.A. Kolesnikov;

"The Influence of the Rigidity of Ribs and Beams on

their Bending" by Assistant N.A. Zhelnovskiy; "The

Calculation of the Bending of Rectangular Plates" by

the Discrete Method" by Assistant Yu.P. Petrov;

"The Calculation of Cylindrical Shells" by the Method

of Discrete Variables" by Aspirant N.I. Gurev;

"The Construction of Technology Section. Servo-System

for the Control of Welding Process" by Assistant

V.V. Dolanovskiy; "An Investigation of the Process of

Polishing by an Abrasive Belt" by Senior Instructor,

Candidate of Technical Sciences V.N. Vershub; "The

Investigation of the Operation of a Pneumatic-

Hydraulic Plant" by Assistant V.I. Batyagin;

"A Static Analysis and Calculation of the Accuracy of

the Technological Processes of Machining" by

O.M. Parkhomenko; "The Automatic Welding of Long Panels"

by Candidate of Technical Sciences L.P. Kozlov;

Prospects in the Use of Specialized Computers for the

Determination of the Optimum Geometry of Cutting Tools"

by Candidate of Technical Sciences L.P. Kozlov;

"The Influence of the Temperature of the Workpiece on

the Accuracy of Machining" by Senior Instructor

V.P. Kozlov; "The Classification of Organizational-

Technical Measures in Machine Construction" by

Senior Instructor M.M. Apunovich; "Features of

Measurable Abrasion of a Cutting Tool in Fine Sharpening"

by Assistant V.N. Malikov; "An Investigation of the

Process of Compression at High Velocities of

Deformation" by Docent, Candidate of Technical Sciences

A.I. Navey; "The Standardization of Vibration Effects

in the Human Organism in Aircraft Production" by Senior

Assistant V.N. Malikov;

"The Theory and Construction of Aircraft Engines and

Piston-Driven Machines" Section. "The Investigation

of the Flow between the Inlet and Outlet Valves of a

Pump" by Senior Instructor V.N. Malikov; "The

Investigation of the Variation in the Steep Parameters of

an Axiel Compressor in Accordance with the Size of the

Radial Clearance" by Assistant A.N. Avdeyev; "On the

Problem of Non-Stationary Heat Transfer" by Assistant

S.D. Prolov; "The Influence of an Electric Field on

the Flame of a Burner" by Senior Engineer P.I. Kostin;

"Calculation of the Temperature Compensation of

Capacitance Pressure Pick-Ups" by Assistant L.Ya. Atafayev;

"Aerohydrodynamics Section. . . . Body" by Assistant

V.I. Kholodovskiy; "The Control of the Boundary Layer of a

Wing by Means of a Gas-Heated Jet" by Assistant

I.A. Pechayev; "The Gas-Hydraulic Analogy and its

Applications" by Senior Instructor D.A. Buntalukov;

"The Aerodynamic Investigation of Wing Profiles" by

Small Reynolds Numbers" by Engineer Yu.F. Kalk.

Card 5/11

Card 6/11

Card 7/11

28824

10.6000 1327

S/147/61/000/003/015/017
E081/E135

AUTHOR: Gur'yev, N.I.

TITLE: Calculation of cylindrical and prismatic shells
by the method of discrete unknowns

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy,
Aviatsionnaya tekhnika, 1961, No.3, pp. 153-154

TEXT: The paper gives an engineering method of calculating thin-walled shells of any cross-sectional profile (open or closed, long or short) with constant or variable wall thickness. It can also be extended to stiffened or unstiffened panels. The method is based on a discrete model of the shell in which the shell is taken as having a finite number of degrees of freedom in a cross-sectional ring, but an infinite number in the longitudinal direction. The stress state in the shell is regarded as consisting of a basic component found from the elementary theory of thin-walled bars, and a self-equilibrating supplementary component which is studied by an energy method using Castigliano's variational principle. The fourth-order

Card 1/2

28824

Calculation of cylindrical and

S/147/61/000/003/015/017
E081/E135

differential equation describing the stress state is quoted and particular cases discussed, corresponding to absolutely rigid cross-sectional planes, and to elastic cross-sectional planes, associated with absolute rigidity in shear of the wall. *X*
There are no figures, tables or references.

ASSOCIATION: Kafedra prochnosti konstruktsiy letatel'nykh apparatov, Khar'kovskiy aviatsionnyy institut
(Department for Constructional Strength of Aircraft, Khar'kov Aviation Institute)

SUBMITTED: December 6, 1960

Card 2/2

12. 2000
S/044/62/000/008/050/73
C111/C333

AUTHOR: Gur'yev, N. I.

TITLE: On the calculation of thin-walled constructions according to the method of the discrete unknown variables

PERIODICAL: Referativnyy zhurnal, Matematika, no. 8, 1962, 41, abstract 8V216. ("Tr. Khar'kovsk. aviats. in-ta", 1961, no. 18, 117-126)

TEXT: Considered are thin-walled supported constructions with working encasements and absolutely rigid cross bracings. The state of stress is searched as the sum of a statically determinate and a statically indeterminate state of stress. The problem being linear the stresses corresponding to these two states of stress are independent and the complete stresses can be obtained by summation. The investigation of the additional state of stress is done according to the scheme for a variation problem. As an example one considers the bending of a rectangular caisson and the stress distribution, which is transmitted on a plate by a single force through an ear. The results of this method are compared with the results of the variation method of V.Z. Vlasov and with those of the force method.

[Abstracter's note: Complete translation.]

Card 1/1

✓B

L 15744-63

EWP(r)/EWT(1)/EWT(m)/BDS AFFTC

ACCESSION NR: AR3002684

8/0124/63/000/005/V007/V007

SOURCE: Rzh. Mekhanika, Abs. 5V51

53

AUTHOR: Gur'yev, N.I.

TITLE: Calculation of cylindrical and prismatic shells by the method of discrete unknowns

26

CITED SOURCE: Tr. Khar'kovsk. aviats. in-ta, vyp. 21, 1961, 37-50

TOPIC TAGS: shell, cylindrical, prismatic, variational method, discrete unknown, method stress, rod, distribution function, bend, twist

TRANSLATION: A variational method of determination of the additionally stressed state of a shell from the action on it of a self-balancing load for use in the calculation according to the semi-momentless theory (taking into account only the transverse bending moments) is considered. The basic stressed state is assumed to be determined by the elementary theory of thin rods. The special property of the proposed method is that the distribution function for the stress along the transverse cross-section is approximated with the use of discrete values

Card 1/2

L 15744-63
ACCESSION NR: AR3002684

of these stresses at some selected points of the contour of the transverse cross-section.

The method is illustrated by an example of the calculation of a rectangular caisson at a bend and a twist. Comparison with the results of calculations by other known methods is made. Bibl. 6 names. A.K. Mroshchinskiy

DATE ACQ: 14Jun63

SUB CODE: PH

ENCL: 00

Card 2/2

L 37081-66 EWP(k)/EWT(m)/T/EWP(w)/EWP(v)/EWP(t)/ETI EV/JF/HM

ACC NR: AP6011332

SOURCE CODE: UR/0198/66/002/003/0035/0041

AUTHOR: Gur'yev, N. F. (Poltava)

ORG: Poltava Pedagogical Institute (Poltavskiy pedagogicheskiy institut)

TITLE: Tension of a rectangular plate with a round hole into which an elastic disk has been welded μ

SOURCE: Prikladnaya mekhanika, v. 2, no. 3, 1966, 33-41

TOPIC TAGS: elasticity theory, flat plate, stress analysis, stress distribution

ABSTRACT: Based on the work of D. I. Sherman (Ploskaya deformatsiya v izotropnoy neodnorodnoy srede, Prikladnaya mekhanika, t. VII, 1943), the tensile loading response of a rectangular plate having a round hole into which an elastic disk has been welded was theoretically considered. After simplifying the problem to that of an elliptical plate with the corresponding loading (in the long axis direction), the equations for the stress distributions and corresponding boundary conditions are formulated, and a solution is sought in the form of a Fourier series

$$\omega^*(\tau) = \sum_{n=-\infty}^{+\infty} q_n \tau^n$$

The solution is then simplified for the case of $a/b = 3$, $R/b = 0.7$, and $\mu/\mu_2 =$

Card 1/2

L 37031-66

ACC NR: AP6011332

4.42/8.10, $\frac{v_1}{v_2} = 1$ (where a, b = ellipse axes; R = hole radius; μ , μ_2 = elastic

modulus of plate and disk; v = Poisson's ratio). The required functionals are calculated by the method of successive approximations (first 8 terms), yielding the stress distribution in the region of the hole. It is found that the presence of the disk reduces the stresses in that region. Orig. art. has: 45 formulas, 2 tables, and 1 figure.

SUB CODE: 13, 20/ SUBM DATE: 11May65/ ORIG REF: 005

ne
Card 2/2

PORADNYA, A.I., doktor tekhn. nauk, prof., retsenzent; VETROV, P.G.,
inzh., retsenzent; GUR'YEV, O.I., kand. arkh. red.;
KOROVKEVICH, V.V., inzh., red.; REYZ, M.B., red.izd-va;
PUL'KINA, Ye.A., tekhn. red.

[Apartment houses made of cellular concrete] Zhilye doma iz
iacheistogo betona; sbornik nauchnykh trudov. Leningrad,
Gosstroizdat, 1963. 235 p. (MIRA 16:12)

1. Akademiya stroitel'stva i arkhitektury SSSR. Leningradskiy
filial.

(Concrete construction) (Apartment houses)

LEBEDYANSKIY, A.A.; TARUNIN, V.F.; FROLKIN, F.F.; BARYSHEV, Yu.D.;
GUR'YEV, O.V.

New method of heating piston rings before high-frequency hardening;
submitted by A.A. Lebedianskii and others. Prom. energ. 13 no.5:17
My '58. (MIRA 11:8)
(Electric heating) (Piston rings)

GUR'YEV, S.D.

3501 The colorimetric determination of thallium with methyl violet. S. D. Gur'yev. *Sbornik Nauch. Trud. Gos. Nauch. Inst. Fiz. Mat.* 1955, (10): 371-377. *Russ. Khim.* 1956, Abstr. No. 4135. — This new method is based on the formation of a colored compound with methyl violet, and subsequent extraction of the compound with toluene. The max. extinction lies in the range 540 to 620 mμ. The max. extinction coeff. is 48,000 at 570 mμ and 64,000 at 620 mμ. The concn. of Ti which can be measured with a 10 mm is 0.8 to 40 μg in 10 ml. of toluene. By the method described, as little as 0.0001 percent of Ti can be determined in a sample of 0.2 to 0.5 g.

C. D. Korman

GUR'YEV, S.D.

3405. The photocolorimetric determination of
Germanium with "phenylfluorone" in dusts from
lead and zinc production. L. B. Ginsburg, S. D.
Gur'ev and A. P. Shitarenkova. Zhurnal Nauch.
Trudy, Gos. Nauch. Inst. Tsvet. Met., 1955, (10),
175-180; Ref. Zhur., Khim., 1956, Abstr. No. 1150.

The reaction between Ge and "phenylfluorone"
studied. Soln. of the compound formed absorb
light mainly in the region up to 580 m μ . The mol
extinction coeff. is 77,000 at 460 m μ and 30,500 at
530 m μ . The concn. of Ge which can be measured
with $l = 1$ cm at 530 m μ is 1 to 50 μ g in 25 ml. A
photocolorimetric method for determining Ge, in
which "phenylfluorone" is used, has been evolved,
which is applicable to products containing consider-
able quantities of heavy metals. The high sensi-
tivity of the reaction allows the use of 0.1 to 0.2 g
of sample with a concn. of Ge > 0.005 per cent.,
and 0.5 to 1.0 g of sample with a concn. of Ge
 < 0.005 per cent., which considerably simplifies
the analysis. The time for a determination is 3
to 4 hr.

C. D. KOPIN

GUR'YEV, S.D.

3366. A fluorescence method for the determination of gallium and indium in dusts from lead, zinc and copper production. D. Gur'yev, L. B. Gerasimova and A. P. Shabatova. *Zhurnal Anal. Khim.*, 1956, (10), 387-397; *Ref. Zhur., Khim.*, 1956, Abstr. No. 4488. Quantities of from 0.001 per cent of Ga and In in dusts from lead, zinc and copper production can be determined in 0.1 to 0.5-g samples by the

fluorescence of their 8-hydroxyquinoline complexes in $CHCl_3$ in u.v. light. Gallium is removed from the majority of interfering elements by extraction of $GaCl_3$ with 6 N HCl after reduction of Fe^{3+} , Sn^{4+} , As^{5+} , Ga^{3+} and Pb^{2+} by metallic Cd. The Ga-8-hydroxyquinoline complex is extracted with $CHCl_3$ from a soln. at pH 3.6 containing phthalate buffer and 1 ml of a 0.1 per cent soln. of 8-hydroxyquinoline. The Ga content is found by usual fluorimetric titration in a dark room. The method allows 0.5 to 10 μg of Ga to be determined in dusts from lead and zinc production. 8-Hydroxyquinoline in $CHCl_3$ (0.2 per cent) (5 ml) completely extracts 5 to 30 μg of In from aq. soln. (25 ml) at pH 3.6 (phthalate buffer). The intensity of fluorescence of the extract is compared with a series of standards, without removal of the aq. phase, or fluorimetric titration is used. The interference of small quantities of Al, Sn and Mo is eliminated by the addition of sodium citrate soln. before addition of the hydroxyquinoline. Since the citrate slightly lowers the intensity of the fluorescence due to In,

Gusev, S. D., Ginsburg, L. B. ...

the same amount is added to the comparison soln. The effect of small quantities of Cu is eliminated by the addition of thiourea. The In is freed from most interfering elements by extraction of InBr₃ with ether from 6 N HBr in the presence of a reducing agent, and extraction from the ether phase with 6 N HCl in the presence of an oxidizing agent.

C. D. Koenig

2/2

PM 2/2

SOV/137-58-8-18102

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 270 (USSR)

AUTHORS: ~~Gur'yev, S. D.~~, Zaychikova, L. G., Ioffe, V. P., Sarayeva, N. F.,
Lutchenko, N. N.

TITLE: Increasing the Precision of the Methods of Determination of Lead
in Lead Concentrates (Utochneniye metodov opredeleniya svintsa
v svintsovykh kontsentratakh)

PERIODICAL: Sb. nauchn. tr. Gos. n.-i. in-t tsvetn. met, 1958, Nr 14,
pp 9-20

ABSTRACT: The results of experiments in the study of the effect of Ba,
Ca, SiO₂, and SO₄ impurities on the determination of large
quantities of Pb in Pb concentrates are described. The optimum
analytical conditions are described. Methods for the determina-
tion of Pb by the molybdate method in Pb concentrates contain-
ing $\leq 3\%$ of barite, also the determination of Pb by the chromate
method with $< 4\%$ SO₄ in the concentrate are adduced.

1. Lead ores--Impurities 2. Lead--Determination P. K.

Card 1/1

SOV/137-58-12-23959

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 12, p 7 (USSR)

AUTHORS: Gur'yev, S. D., Ioffe, V. P.

TITLE: Behavior of Fluorine in the Roasting of Fluorite (Fluorspar) [Povedeniye ftora pri obzhige flyuorita (plavikovogo shpata)]

PERIODICAL: Sb. nauchn. tr. Gos. n.-i. in-t tsvetn. met., 1958, Nr 14, pp 58-60

ABSTRACT: In order to clarify the behavior of F during the roasting of samples of Zn concentrate, fluorite is roasted in a mixture with sphalerite. The result of the experiments performed makes evident that even 2 hours of roasting of a fluorite and sphalerite mixture at 600° C does not ensure complete combustion of S and that substantial F losses occur even at 700°. F losses at lower temperature may be due to a high concentration of SO₂ produced in the roasting of the sphalerite. This causes partial decomposition of the fluorite, resulting in conversion of a portion of the fluorite F into volatile H₂F₂. The results of a series of experiments showed F losses to occur at a lower temperature (500-600°). To oxidize sulfide S in the determination of F in

Card 1/2

SOV/137-58-12-23959

Behavior of Fluorine in the Roasting of Fluorite (Fluorspar) (Cont.)

sulfide products it is advisable to fuse the sample with Na_2O_2 .

Ye. M.

Card 2/2

SOV/157-58-8-18107

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 471 (USSR)

AUTHORS: Gur'yev, S. D., Ioffe, V. P.

TITLE: Photocolorimetric Method of Determination of Fluorine in Zinc Concentrates and Electrolytes With the Use of Thorium-alizarin Lacquer (Fotokolorimetricheskiy metod opredeleniya flora v tsinkovykh kontsentratakh i elektrolitakh s primeneniym toriy-alizarinovogo laka)

PERIODICAL: Sb. nauchn. tr. Gos. n. -i. in-t tsvetn. met., 1958, Nr 14, pp 61-66

ABSTRACT: The method is based on the discoloration of alizarin red lacquer by the combined action of Th and F⁻. To determine F⁻ in Zn concentrates, 0.5-1 g of the specimen is fused with Na₂O₂. The cooled melt is leached out with 30 cc of water, the solution with the precipitate is transferred into a distillation flask, 0.1 - 0.2 g of quartz and several drops of phenolphthalein are added, then from a dropping funnel 1:1 H₂SO₄ is added, and finally concentrated H₂SO₄ so that its concentration would become 1:1. Then SiF₄ is distilled off at 140 - 160°C. 100 cc of the distillate are collected, it is neutralized with NaOH solution to phenolphthalein and evaporated to a volume of

Card 1/2

SOV/137-58-8-18107

Photocolorimetric Method of Determination of Fluorine (cont.)

20 - 40 cc. After filtering the solution is transferred into a 50-cc flask which is then filled to the mark with water. 1 - 5-cc aliquot portions are transferred into 50-cc graduates and diluted with water to 30 - 40 cc. 5 cc of alizarin red indicator and one drop of 0.3N HNO_3 are added, and the graduate is filled up to the mark with water. After this 5 cc of Th reagent are added and after 30 minutes the solutions are measured for optical density on the FEK-M type photocolorimeter using a green filter. The reading is taken on the left-hand drum and the F content is determined on the calibration curve. The contents of F in electrolytes is determined by the same method.

V. N.

1. Fluorine--Determination 2. Zinc ores--
Colorimetric analysis 3. Electrolytes--
Colorimetric analysis

Card 2/2

AUTHORS: Gur'yev, B. D., Sarayeva, N. F. SSV/32-24-10-10/70

TITLE: The Colorimetric Determination of Tin in Metallic Lead With Phenylfluoron (Kolorimetricheskoye opredeleniye olova v metallicheskom svintse s fenilfluoronom)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 10, pp 1195-1196 (USSR)

ABSTRACT: V. A. Nazarenko and N. V. Lebedeva (Ref 1) pointed out that the fluorons react only with tetravalent tin. In the present paper the colorimetric conditions worked out by L. B. Ginzburg and E. P. Shkrobot (Ref 2) are used. The extraction of tin from lead and other interfering admixtures was carried out using cupferron. Special experiments were carried out in order to detect the optimum acidity in the extraction of the tin cupferronate. It was found that tin is extracted completely at an acidity of 0,3 - 0,6 n (nitric acid) if three extractions are carried out. In the tin extraction antimony has to be oxidized to the pentavalent stage. It was found that in the extraction from 20 ml the lead content must not surpass 500 mg, since a greater quantity influences the completeness of the extraction. The determination method

Card 1/2

SOV/32-24-10-10/70

The Colorimetric Determination of Tin in Metallic Lead With Phenylfluoron

was carried out on a series of samples, and the lead samples (with tin) were analyzed colorimetrically with phenylfluoron as well as volumetrically and iodometrically. A description of the analytical procedure is given which shows that the optical density of the solution was measured with a light filter Nr 4 and a colorimeter ~~FEK-M-54~~. There are 2 tables and 5 references, 2 of which are Soviet.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy institut tsvetnykh metall^{ov}
(State Scientific Research Institute of Nonferrous Metals)

Card 2/2

5(2)

AUTHORS: Gur'yev, S. D., Sarayeva, N. F.

SOV/32-25-7-8/50

TITLE: Definition of Small Amounts of Calcium and Magnesium in Metallic Lead (Opredeleniye malykh kolichestv kal'tsiya i magniya v metallicheskom svintse)

PERIODICAL: Zavodskaya laboratoriya, 1959, Vol. 25, Nr 7, pp 795-798 (USSR)

ABSTRACT: The described method is based upon a complexometric titration of calcium with murexide and the sum of calcium + magnesium with ~~murexide~~ murexide black. The colorimetric method with titanium yellow was applied for the direct determination of magnesium. The decomposition of weighed-in lead took place according to GOST 2076-48. An extraction of diethyl dithiocarbamate with chloroform was carried out for the separation of the ion residues of heavy metals. Results are given of the determination of calcium (Table 1) after the complexometric titration, and after the removal of lead by extraction. A description is also given for the determination of calcium by means of the flame photometric method (Table 2) after an acid decomposition of the sample and of amalgamation on the one hand, and by means of complexometric titration with trilon B after a sample

Card 1/2

Definition of Small Amounts of Calcium and Magnesium
in Metallic Lead

SOV/32-25-7-8/50

amalgamation and a preceding extraction of heavy metals on the other hand. The flame photometric analysis was carried out in the spektral'naya laboratoriya Gintsvetmeta (Spectral Laboratory Gintsvetmet). The course of the analysis for the determination of calcium and magnesium is described. The mentioned analyses were carried out with various lead samples, in which the colorimetric measurement took place visually and by means of the photocolormeter FEK-M with a green light filter (results of the analysis see Table 3). The above mentioned extractions of the admixtures took place after their precipitation with sodium carbamate at pH = 4 - 5. Amounts up to 80 % of arsenic do not disturb the colorimetric measurement of magnesium (Table 4). There are 4 tables.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy institut tsvetnykh metallov (State Scientific Research Institute for Heavy Nonferrous Metals)

Card 2/2

GUR'YEV, S.D.; SARAYEVA, N.F.

Photocolorimetric determination of antimony in tungsten
concentrates. Sbor. nauch. trud. Gintsvetmeta no.18:37-40 '61.
(MIRA 16:7)

(Antimony---Analysis)

(Tungsten---Analysis)

GUR'YEV, S.D.; IOFFE, V.P.

Photocolorimetric determination of bismuth in tungsten
concentrates. Sbor. nauch. trud. Gintsvetmeta no.18:41-44 '61.
(MIRA 16:7)

(Bismuth--Analysis) (Tungsten--Analysis)

GUR'YEV, S.D.; SARAYEVA, N.F.

Colorimetric determination of tin in antimonial lead. Sbor.
nauch. trud. Gintsvetmeta no.18:48-52 '61. (MIRA 16:7)

(Tin—Analysis) (Lead-antimony alloys—Analysis)

GUR'YEV, S.D.; BLYAKEMAN, A.A.; LUTCHENKO, N.N.

Colorimetric determination of selenium by its reaction with
3,3'-diaminobenzidine. Sbor. nauch. trud. Gintsvetmeta no.19:
661-668 '62. (MIRA 16:7)

(Selenium) (Colorimetry)

GUR'YEV, S.D.; LUTCHENKO, N.N.

~~Determining thallium in thallium concentrates.~~ Stor., nauch.
trud. Gintsvetmeta no.19:718-721 '62. (MIRA 16:7)

(Thallium--Analysis)

GUR'YEV, S.D.; LUTCHENKO, N.N.

Determining germanium in germanium concentrates. Sbor. nauch.
trud. Gintsvetmeta no.19:722-726 '62. (MIRA 16:7)

(Germanium--Analysis)

GUR'YEV, S.N., inzh.; KURICHEV, V.P.

Car repair operations at the inspection points need improvement. Zhel.dor.transp. 41 no.11:80 N '59.

(MIRA 13:2)

1. Nachal'nik otdela vagonnogo khozyaystva Barabinskogo otdeleniya, stantsiya Barabinsk (for Gur'yev). 2. Glavnyy inzhener vagonnogo depo, stantsiya Barabinsk (for Kurichev).
(Railroads--Maintenance and repair)

GUR'NEV, S.V.

Deceased

Mining Engineering

See ILC

Garikov, E. P. - "Initiative in Ventilative Mechanisms of the Time of the
of the Initial Period of the Initial - 31-32-33 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GUR'YEV, V., agronom

"Krasnyi putilovets" Collective Farm. Nauka i pered. op. v sel'khoz.
8 no.4:62-65 Ap '58. (MIRA 11:5)
(Kashin District--Collective farms)

AUTHOR: Gur'yev, V. 2-58-4-12/14

TITLE: On the New "Basic Principles for Labor and Wage Accounting in Industrial Undertakings" (O novykh "osnovnykh polozheniyakh po uchëtu truda i zarabotnoy platy na promyshlennyykh predpriyatiyakh")

PERIODICAL: Vestnik Statistiki, 1958, Nr 4, pp 89-90 (USSR)

ABSTRACT: The author outlines the provisions of the new "Basic Principles for Labor and Wage Accounting in Industrial Undertakings" approved by the State Committee of the USSR Council of Ministers on labor and wage questions, the USSR Ministry of Finance, and the USSR Central Statistical Administration. Changes have been made in order to: 1) cut down paperwork; 2) increase centralization; 3) further mechanize clerical work; 4) simplify methods of wage accounting.

AVAILABLE: Library of Congress

Card 1/1

25(3)

SOV/2-59-5-6/10

AUTHOR: Gur'yev, V.

TITLE: To Simplify Personnel Records at the Industrial Enterprises

PERIODICAL: Vestnik statistiki, 1959, Nr 5, pp 63-65 (USSR)

ABSTRACT: The author refers to the article by V.N. Starovskiy in Nr 3 of Vestnik statistiki of 1959, and to the survey made in 100 factories by the Nauchno-issledovatel'skiy institut truda Gosudarstvennogo komiteta Soveta Ministrov SSSR (Scientific Research Institute of Labor at the State Committee of the Council of Ministers of the USSR). He complains of the great variety of entries insisted upon in personnel records kept by the industrial enterprises which lead to a waste of time and labor (calculated in millions of working days). The author suggests cancellation of many forms (Nos 59, 206, 210, 3 and 6 used for individual factory workers), reduction of many card entries, and cancellation of internal correspondence

Card 1/3

SOV/2-59-5-6/10

To Simplify Personnel Records at the Industrial Enterprises

and administrative "orders" referring to admission, transfer, leave and dismissal of workers. A number of individual enterprises are quoted who indulge in excessive formalities, namely: Leningradskiy tonkosukonnyy kombinat im. Tel'mana (Leningrad Fine Cloth Combine imeni Tel'man); Moskovskaya konditerskaya fabrika im. Babayeva (Moscow Confectionary Factory imeni Babayev); Moskovskiy tormoznoy zavod (Moscow Brake Factory); Fabrika "Dukat" (Factory "Dukat"); Zavod "Frezer" (Factory "Frezer"); Tekstil'nyy kombinat "Trekhgornaya manufaktura" (Textile Combine "Trekhgornaya Manufaktura"), Moskovskiy zavod malolitrzhnykh avtomobiley (Moscow Plant of Automobiles with Small Engine), Fabrika "Parizhskaya Kommuna", Khar'kovskiy elektronekhanicheskiy zavod (Khar'kov Electromechanical Plant). Finally, the author suggests a simplified system of personal records consisting of: 1) one uniform index card to be

Card 2/3

SOV/2-59-5-6/10

To Simplify Personnel Records at the Industrial Enterprises

kept by the staff office of the enterprise; 2) an application form for work, on which all the subsequent action should be entered; 3) a uniform form for subsequent transfers, leaves and dismissals, and 4) a uniform pay roll. There is 1 table.

Card 3/3

GUR'YEV, V.I.

Organization and the conduct of a winter excursion on the study of
birds. Est. v shkole no.6:61-65 N-D '54. (MLRA 7:12)

1. Direktor Grachevskoy semiletney shkoly Kaluzhskoy oblasti
Ugodsko-Zavodkogo rayona.
(Birds) (School excursions)

GUR'YEV, V.I.; glavnyy metodist pavil'ona; NAPOL'SKIY, otvetstvennyy
redaktor; ZAVARSKIY, A.I., redaktor; VESKOVA, Ye.I., tekhnicheskiy
redaktor

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1. Upravleniye tramvaya Iipetska.

88456

S/056/60/039/006/048/063
B006/B063

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AUTHORS: Sitenko, A. G., Gur'yev, V. N.

TITLE: Inelastic Scattering of High-energy Electrons by Nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
Vol. 39, No. 6(12), pp. 1760-1765

TEXT: A theoretical study has been made of inelastic scattering of fast electrons by nuclei, which is accompanied by ejection of nucleons from the nucleus. Such investigations furnish data on the dynamic properties of nuclei. There are two types of inelastic scattering; inelastic electron scattering may be accompanied by excitation of higher energy levels of the nucleus and furnishes data on the nuclear levels. On the other hand, it may also lead to an electrodisintegration (emission of protons or neutrons) and thus gives direct information on the momentum distribution of nucleons in the nucleus, which depends on their spatial correlation. These data are important to the further development of the theory of nuclear structure, especially for the mode of two-particle interaction between the nucleons. The electromagnetic interaction between a fast electron and a nuclear

Card 1/4

88456

Inelastic Scattering of High-energy
Electrons by Nuclei

S/056/60/039/006/048/063
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proton, which is considered a non-relativistic particle, is discussed, and the ejection probability for this proton is calculated in a perturbation-theoretical manner. An expression is derived for the matrix element of the interaction energy, in which only the two-particle correlation is taken into account. For the limiting case of a high momentum of the ejected proton one obtains

$$d\sigma = \frac{4e^4}{(q^2 - \Delta E^2)^2} Z(A-1) Sg(q-K) \delta(\Delta E - s_p - \frac{1}{2}E_p) dk' dK, \quad (9)$$

где

$$g(q-K) = \frac{1}{Z(A-1)} \sum_{\alpha\beta} \frac{1}{(2\pi)^3} \int dr_2 \left| \int dr_1 e^{i(q-K)r_1} \psi_{\alpha\beta}(r_1, r_2) \right|^2, \quad (10)$$

$$S = \frac{1}{2} \sum \left| \bar{u}' \left\{ \left(1 - \frac{q^2 - \Delta E^2}{8M^2} (1 + 2\kappa) \right) \beta + \right. \right. \\ \left. \left. + \frac{i}{2M} (q - 2K + i(1 + \kappa)[q\sigma]) \gamma \right\} u \right|^2. \quad (11)$$

the function $g(\vec{q} - \vec{K})$ is further studied. This function has a sharp maximum for $\vec{q} = \vec{K}$ (i.e., when the momentum of the ejected proton is equal to the momentum loss of the electron). $\vec{q} = \vec{K} - \vec{K}'$ and $\Delta E = E - E'$ are the momentum and energy, respectively, transferred from the electron to the

Card 2/4

88456

Inelastic Scattering of High-energy
Electrons by Nuclei

S/056/60/039/006/048/063
B006/B063

proton. e , M , and κ are the charge, mass, and anomalous magnetic moment of the proton; $\hbar = c = 1$. $\Psi_{\alpha\beta}(\vec{r}_1, \vec{r}_2) = \Psi_{\alpha}(\vec{r}_1)\Psi_{\beta}(\vec{r}_2)f_{\alpha\beta}(\vec{r}_1 - \vec{r}_2)$, $\Psi_{\vec{K}}(\vec{r})$

$= \exp(i\vec{K}\vec{r})$; $\Psi_{\alpha}(r)$ and $\Psi_{\beta}(r)$ are the proton and neutron single-particle functions, respectively. One obtains

$g(\vec{q} - \vec{K}) = S_{\vec{p}, \vec{P}} \frac{1}{(2\pi)^3} \left| \int d\vec{r} \exp(i(\vec{q} - \vec{K} + \vec{P}/2)\vec{r}) \varphi(\vec{r}) \right|^2$, where S is a quantity averaged over all momentum values of \vec{p} and \vec{P} . For the distribution function one obtains

$$g(\kappa) = \frac{2r_c^2}{\pi\Omega} \left\{ \frac{1}{\kappa^2} \left(\cos \kappa r_c - \frac{\sin \kappa r_c}{\kappa r_c} \right) - \frac{\kappa^{-1/2} \sin \kappa r_c + \cos \kappa r_c}{\lambda^2 + \kappa^2} \right\}^2, \quad \kappa = q - K. \quad (17)$$

This relation is graphically compared with the empirical distribution function obtained for C^{12} :

$$g(\kappa) = \pi^{-3/2} \alpha^{-3} \exp(-\kappa^2/\alpha^2), \quad \alpha^2/2M = 14 \text{ Mev.}$$

Card 3/4

Inelastic Scattering of High-energy
Electrons by Nuclei

88456
S/056/60/039/006/048/063
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Also other functions (e.g., $\alpha^2/2M = 18$ Mev) are compared herewith.

Calculation of $g(\kappa)$ for C^{12} on the basis of the shell model yields $g(\kappa)$
 $= \frac{1}{3} (\pi)^{-3} (1 + \frac{4}{3} \kappa^2/v^2) \exp(-\kappa^2/v^2)$. For $R = 3.07 \cdot 10^{-13}$ cm, $\alpha^2/2M = 5$ Mev. ✓

Assuming $\alpha^2/2M = 9.1$ Mev, one obtains good agreement with the empirical curve. The energy distribution of electrons inelastically scattered on C^{12} is briefly discussed. A. I. Akhiezer is thanked for discussions. There are 2 figures and 9 references: 1 Soviet, 7 US, and 1 British.

ASSOCIATION: Fiziko-tekhnicheskii institut Akademii nauk Ukrainskoy SSR
(Institute of Physics and Technology, Academy of Sciences
Ukrainskaya SSR)

SUBMITTED: July 18, 1960

Card 4/4

GUR'YEV, Viktor Pavlovich

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1964

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SOURCE CODE: UR/0363/67/003/002/0390/0391

AUTHOR: Sysoyov, L. A.; Rayskin, E. K.; Gur'yev, V. R.

ORG: All-Union Scientific Research Institute of Single Crystals, Kharkov (Vsesoyuznyy nauchno-issledovatel'skiy institut monokristallov)

TITLE: Measurement of the melting points of zinc and cadmium sulfides, selenides and tellurides

SOURCE: AN SSSR. Izvestiya. Neorganicheskkiye materialy, v. 3, no. 2, 1967, 390-391

TOPIC TAGS: zinc sulfide, cadmium selenide, cadmium sulfide, cadmium telluride, zinc compound, melting point

ABSTRACT: The authors checked earlier thermographic measurements of the melting and crystallization points of ZnS, ZnSe, ZnTe, CdS, CdSe and CdTe, using a tube compression furnace at pressures of 10-20 kN/m² of argon. An EPP-09-1/10 multirange recording potentiometer with scales from 0 to 50 mV and a precision of 0.05% was employed. The melting points were determined to within $\pm 10^\circ\text{C}$. Use of the refined data made it possible to grow high-quality single crystals from the melt. Measurement of the melting points of ZnSe, ZnTe and CdTe at different pressures shows only a slight rise of the melting point with increasing pressure and indicates that the specific volume of the materials decreases upon their crystallization. In conclusion, authors thank

Card 1/2

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V. M. Andreyev for providing various samples of starting materials. Orig. art. has:
1 table.

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Card 2/2

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